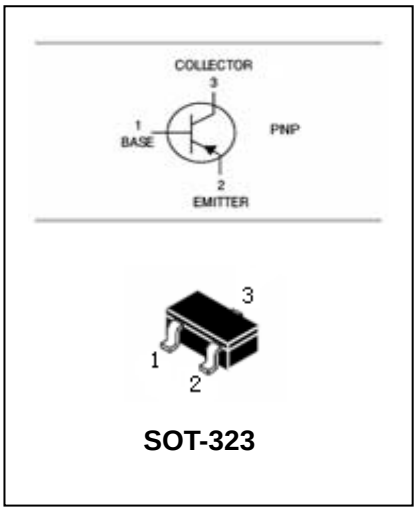
# PNP Silicon Epitaxial Planar Transistor

## BC856W/BC857W/BC858W

## FEATURES

Lead-free

- For AF input stages and driver applications.
- High current gain.
- Low collector-emitter saturation voltage.
- Low noise between 30Hz and 15 kHz.
- Complementary types:BC846W,BC847W,BC848W.




**SOT-323**

## APPLICATIONS

- General purpose switching and amplification application.

## ORDERING INFORMATION

| Type No. | Marking | Package Code |
|---|---|---|
| BC856W | 3A/3B | SOT-323 |
| BC857W | 3E/3F/3G | SOT-323 |
| BC858W | 3J/3K/3L | SOT-323 |

## MAXIMUM RATING @ Ta=25℃ unless otherwise specified

| Symbol | Parameter | | Value | Units |
|---|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | BC856W<br>BC857W<br>BC858W | -80<br>-50<br>-30 | V |
| $V_{CEO}$ | Collector-Emitter Voltage | BC856W<br>BC857W<br>BC858W | -65<br>-45<br>-30 | V |
| $V_{EBO}$ | Emitter-Base Voltage | | -5 | V |
| $I_C$ | Collector Current -Continuous | | -100 | mA |
| $I_{CM}$ | Peak Collector current | | -200 | mA |
| $I_{BM}$ | Peak Base current | | -200 | mA |
| $P_C$ | Collector Dissipation | | 200 | mW |
| $T_j, T_{stg}$ | Junction and Storage Temperature | | -65 to +150 | ℃ |

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## ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

| Parameter | Symbol | Test conditions | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C$=-10μA,$I_E$=0 BC856W<br>BC857W<br>BC858W | -80<br>-50<br>-30 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C$=-10mA,$I_B$=0 BC856W<br>BC857W<br>BC858W | -65<br>-45<br>-30 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E$=-1μA,$I_C$=0 | -5 | | | V |
| Collector cut-off current | $I_{CBO}$ | $V_{CB}$=-30V,$I_E$=0 | | | -15 | nA |
| Emitter cut-off current | $I_{EBO}$ | $V_{EB}$=-5V,$I_C$=0 | | | -0.1 | μA |
| DC current gain | $h_{FE}$ | $V_{CE}$=-5V,$I_C$=-10 μ A<br>BC856AW,BC857AW<br>BC856BW,BC857BW,BC858BW<br>BC857CW,BC858CW | | <br>140<br>250<br>480 | | |
| | | $V_{CE}$=-5V,$I_C$=-2mA<br>BC856AW,BC857AW<br>BC856BW,BC857BW,BC858BW<br>BC857CW,BC858CW | <br>125<br>220<br>420 | <br>180<br>290<br>520 | <br>250<br>475<br>800 | |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C$=-10mA, $I_B$= -0.5mA<br>$I_C$=-100mA, $I_B$= -5mA | | -0.075<br>-0.25 | -0.3<br>-0.65 | V |
| Base-emitter saturation voltage | $V_{BE(sat)}$ | $I_C$=-10mA, $I_B$= -0.5mA<br>$I_C$=-100mA, $I_B$= -5mA | | -0.7<br>-0.85 | | V |
| Base-emitter voltage | $V_{BE(on)}$ | $I_C$=-2mA, $V_{CE}$=5V<br>$I_C$=-10mA, $V_{CE}$=5V | -0.6 | | -0.75<br>-0.82 | V |
| Transition frequency | $f_T$ | $V_{CE}$=-5V,$I_C$=-20mA,f=100MHz | | 250 | | MHz |
| Collector-base capacitance | $C_{cb}$ | $V_{CB}$=-10V,f=1MHz | | 3 | 5 | pF |
| Emitter-base capacitance | $C_{eb}$ | $V_{EB}$=-0.5V,f=1MHz | | 10 | 15 | pF |

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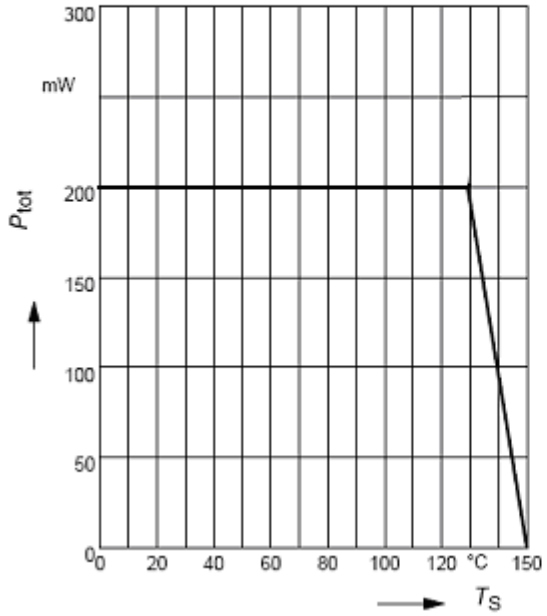
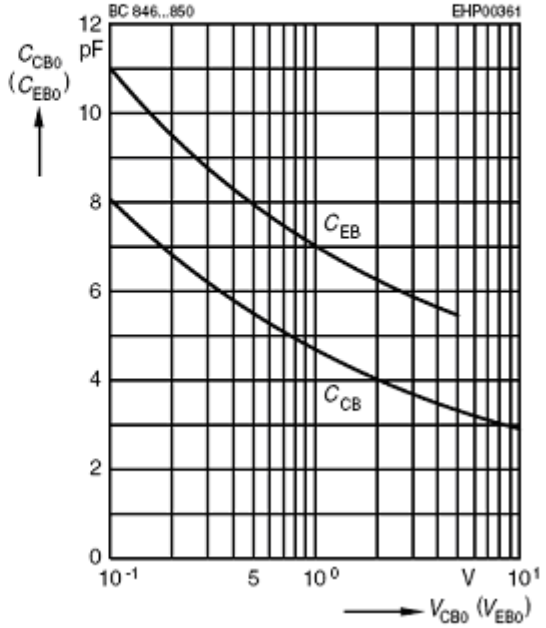
## TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

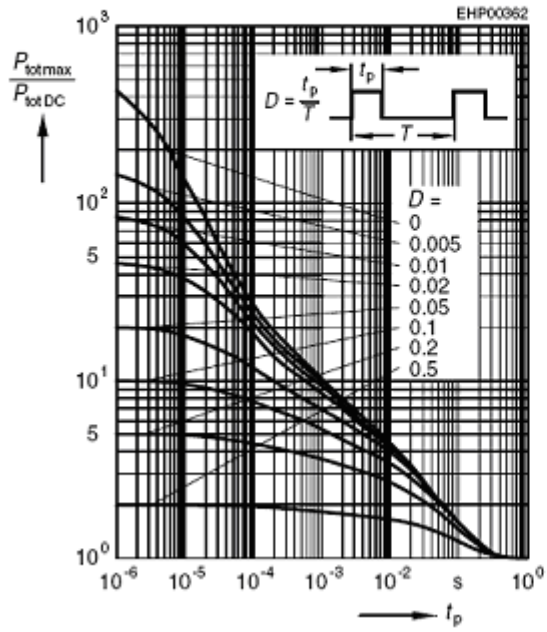
**Total power dissipation $P_{tot} = f(T_S)$**



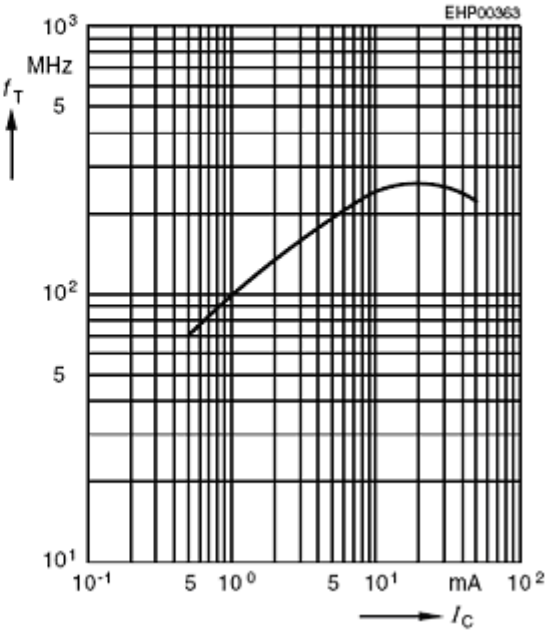

**Collector-base capacitance $C_{CB} = f(V_{CBO})$**
**Emitter-base capacitance $C_{EB} = f(V_{EBO})$**




**Permissible pulse load**
$P_{totmax} / P_{totDC} = f(t_p)$




**Transition frequency $f_T = f(I_C)$**
$V_{CE}$ = 5V

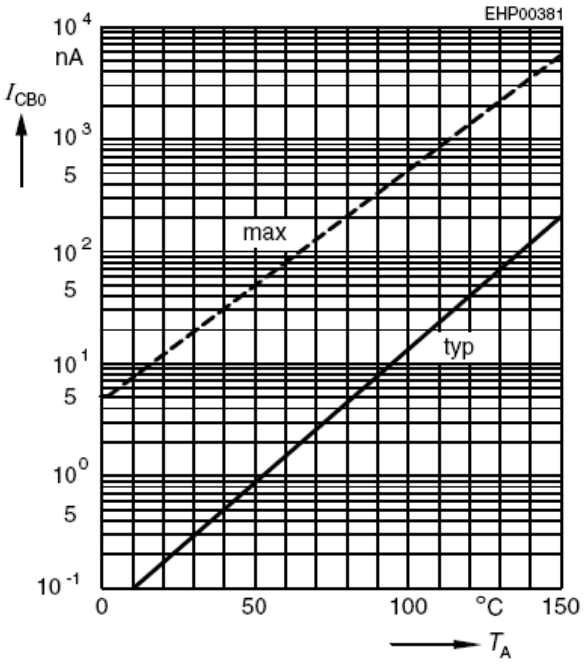


# PNP Silicon Epitaxial Planar Transistor

## BC856W/BC857W/BC858W

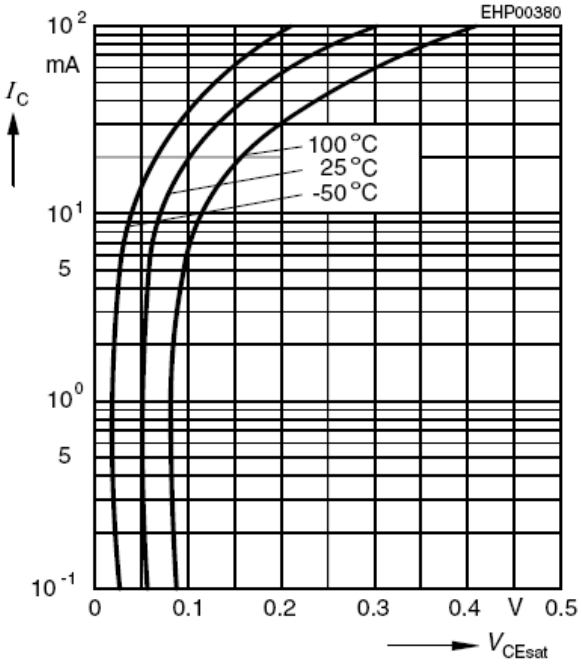
**Collector cutoff current $I_{CBO} = f(T_A)$**

$V_{CB}$ = 30V



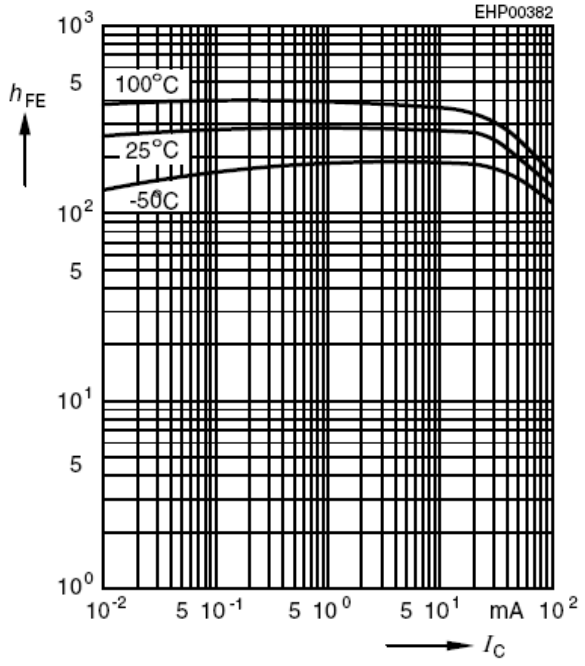

**Collector-emitter saturation voltage**

$I_C = f(V_{CEsat})$, $h_{FE}$ = 20



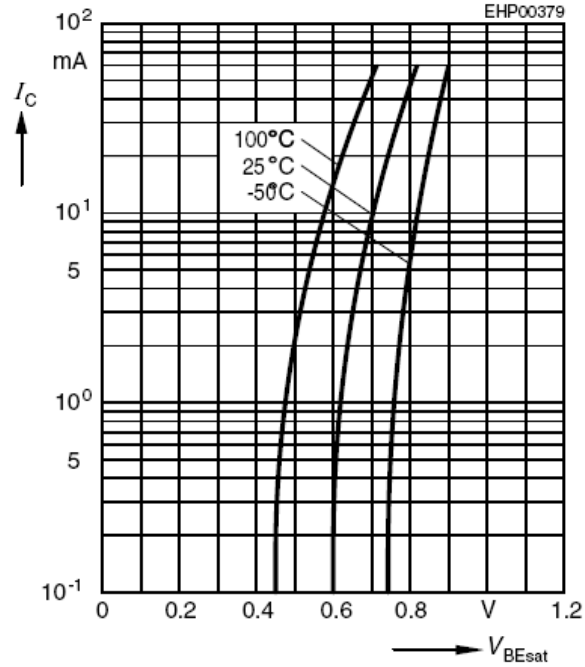

**DC current gain $h_{FE} = f(I_C)$**

$V_{CE}$ = 5V




**Base-emitter saturation voltage**

$I_C = f(V_{BEsat})$, $h_{FE}$ = 20

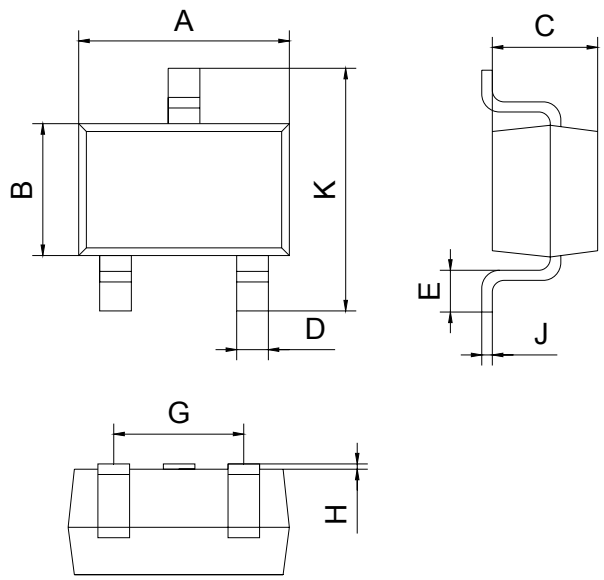


# PNP Silicon Epitaxial Planar Transistor

## BC856W/BC857W/BC858W

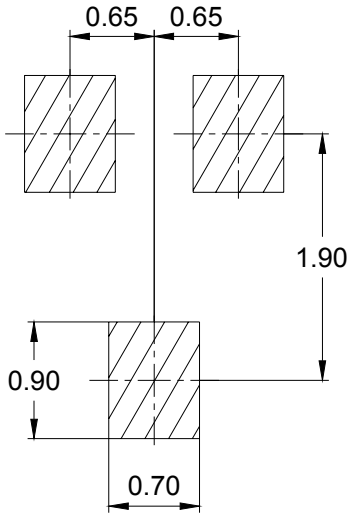
## PACKAGE OUTLINE

Plastic surface mounted package SOT-323




| SOT-323 | | |
|---|---|---|
| Dim | Min | Max |
| A | 2.00 | 2.20 |
| B | 1.15 | 1.35 |
| C | 0.95 Typical | |
| D | 0.30 Typical | |
| E | 0.25 | 0.40 |
| G | 1.2 | 1.4 |
| H | 0.02 | 0.10 |
| J | 0.10 Typical | |
| K | 2.20 | 2.40 |
| All Dimensions in mm | | |

## SOLDERING FOOTPRINT




Unit : mm

## PACKAGE INFORMATION

| Device | Package | Shipping |
|---|---|---|
| BC856W/BC857W/BC858W | SOT-323 | 3000/Tape&Reel |